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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/835,625	04/09/97	MOLL	E M10043/20006

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EXAMINER	
TWEEL JR,J	
ART UNIT	**PAPER NUMBER**
2736	18

DATE MAILED: 01/04/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/835,625	Moll
Examiner	**Group Art Unit**
John Tweel	2736

☒ Responsive to communication(s) filed on *Oct 12, 1999*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1, 2, 4, 9, 12, 15, 17, 18, 21, 38, 40, 44, 45, 51, 55, and 67-70* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1, 2, 4, 9, 12, 15, 17, 18, 21, 38, 40, 44, 45, 51, 55, and 67-70* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

1. The Declaration under 37 CFR 1.132 has been read and considered. However, it is not deemed to obviate over the existing 35, U.S.C. 112, first paragraph rejection.

2. Claims 1, 55, and 67-70 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The applicant seems to miss the point of the rejection under 112, first paragraph. It is not denied that the technology to achieve control of a computer using EEG or Neurophysiology methods does not exist. Nor is it denied that it may not be possible to construct some sort of apparatus wherein a user's biological patterns may be used to influence the control of a computer using said biological patterns. However, there has been no sufficient explanation as to how or why a user's thoughts come into play during the execution of the controlling at all. It is as if to say that "sensing a user's thought" appears to be a gross misnomer if all that is occurring during the control of the computer is the sensing of biomagnetic potentials. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim

drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. As of now, there is no patentable difference between what the applicant considers as their "thought" controlled system and the prior art systems used to enable it. Unfortunately, it may require a decision by the courts to finally decide the viability of the applied rejection.

3. Claims 1, 4, 9, 12, 15, 17, 21, 38, 40, 51, 55, and 67-70 are rejected under 35 U.S.C. 102(b) as being anticipated by **Junker**.

For claim 1, the apparatus for controlling a computer operation based on at least one stimulus sensed from a user taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed stimuli input means is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting at least one stimulus being caused by the thought of the user, 2) the claimed computer having an operating system is met by the control system (No. 29) having an operating system (No. 31) for processing said at least one stimulus to produce a function control signal to control the operation of the operating system without requiring the user to manipulate the user controls, 3) the claimed function selection means comprising a memory is met by the data store (No. 19) in which multiple brain-body signals are stored with each sample from the user, and 4) the claimed identification means for comparing the stimulus to identify a function control signal is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the

presentation of various audio and visual feedback. Also external devices such as wheelchair, cursor control, and music synthesizer is connected to the control system for operation.

For claim 4, the claimed auxiliary stimuli input means for providing additional or alternative stimuli inputs from the user is met by the electroencephalographic (EEG) and electromyographic (EMG) biopotentials of **Junker** that are correlated to control of the device.

For claim 9, the claimed communicating means coupled to the computer is met by the processing unit (No. 30) and the input/output bus (No. 57) of **Junker** which communicates information pertaining to the user's thoughts.

For claim 12, the claimed designating means coupled to the function selection means is met by the menu bar (No. 602) seen in Figure 6 that designates particular representations of the different stimuli.

For claim 15, the claimed conditioning means for conditioning the stimulus is met by the amplifier and filter system (No. 24) that amplifies and bandpass filters the brain-body signals.

For claim 17, the claimed database for storing inaccuracies is met by the data store (No. 19) that stores the current sample of the input signals and vector quadrature values corresponding to the previously stored control signals as detailed in the explanation of the phase-locked loop program to set a control frequency selected by the user.

For claim 21, the claimed stimuli selection means is observed in Figure 5 which depicts acceptance criteria (magnitude, phase, frequency shift) to form previously-stored user stimuli.

For claim 38, the claimed means for detecting coactive stimuli is met by the multiple input devices such as the EEG electrodes (No. 22) and the other input devices (No. 20) such as the keyboard, mouse, and other input means.

For claim 40, the claimed means for detecting sequential stimuli is met by the control signal generation program that reads sequential sampled brain-body signals (Step 404) through a series of iterations, from one up to 1600.

For claim 51, the claimed bodily communication means to provide for a communication path for at least one stimulus between the user's brain and body part is met by the aforementioned electrodes (No. 22) that comprise a communication channel between the operator's brain-body signals and various external devices (No. 55) such as a wheel chair, cursor control, sailboat, or other ambulatory devices.

For claim 55, the apparatus for controlling computer operation from one or more stimuli sensed from the human body taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed detecting means for detecting stimuli is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting stimuli to produce stimuli, 2) the claimed selecting means for selecting one or more of said detected stimuli is met by the user input devices (No. 20) such as the keyboard, mouse, and others, 3) the claimed identification means for identifying one or more said detected stimuli is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback, and 4) the claimed receiving means for receiving said function control signal is met by the microprocessor

processing unit (No. 30) that transmits data between it, the operating system programs and the data store (No. 19).

For claim 67, the apparatus for controlling a computer operation based on at least one stimulus sensed from a user taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed stimuli input means is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting at least one stimulus being caused by the thought of the user, 2) the claimed computer having an operating system is met by the control system (No. 29) having an operating system (No. 31) for processing said at least one stimulus to produce a function control signal to control the operation of the operating system without requiring the user to manipulate the user controls, 3) the claimed function selection means comprising a memory is met by the data store (No. 19) in which multiple brain-body signals are stored with each sample from the user, and 4) the claimed identification means for comparing the stimulus to identify a function control signal is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback. Also external devices such as wheelchair, cursor control, and music synthesizer is connected to the control system for operation.

For claim 68, the apparatus for controlling computer operation from one or more stimuli sensed from the human body taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed detecting means for detecting stimuli is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting stimuli to produce stimuli, 2) the claimed selecting means for selecting one or more of said detected stimuli is met by the user input devices (No. 20)

such as the keyboard, mouse, and others, 3) the claimed identification means for identifying one or more said detected stimuli is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback, and 4) the claimed receiving means for receiving said function control signal is met by the microprocessor processing unit (No. 30) that transmits data between it, the operating system programs and the data store (No. 19).

For claim 69, the apparatus for controlling a computer operation based on at least one stimulus sensed from a user taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed stimuli input means is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting at least one stimulus being caused by the thought of the user, 2) the claimed computer having an operating system is met by the control system (No. 29) having an operating system (No. 31) for processing said at least one stimulus to produce a function control signal to control the operation of the operating system without requiring the user to manipulate the user controls, 3) the claimed function selection means comprising a memory is met by the data store (No. 19) in which multiple brain-body signals are stored with each sample from the user, and 4) the claimed identification means for comparing the stimulus to identify a function control signal is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback. Also external devices such as wheelchair, cursor control, and music synthesizer is connected to the control system for operation.

For claim 70, the apparatus for controlling computer operation from one or more stimuli sensed from the human body taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed detecting means for detecting stimuli is met by the electrodes (No. 22) coupled to the user (No. 10) for detecting stimuli to produce stimuli, 2) the claimed selecting means for selecting one or more of said detected stimuli is met by the user input devices (No. 20) such as the keyboard, mouse, and others, 3) the claimed identification means for identifying one or more said detected stimuli is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback, and 4) the claimed receiving means for receiving said function control signal is met by the microprocessor processing unit (No. 30) that transmits data between it, the operating system programs and the data store (No. 19).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Junker** in view of **Kuc et al**.

For claim 2, the apparatus taught by **Junker** includes the claimed subject matter as noted in the rejection of claim 1 above. However, nowhere in the reference is biomagnetic mentioned as stimuli input means.

The biomedical magnetism imaging apparatus and method taught by **Kuc et al** performs biomagnetic imaging to determine the location and intensity of current sources within a subject by sensing the magnetic field within the subject. This is accomplished using a number of

Superconducting Quantum Interference Devices (SQUIDs) which are fed magnetic field information using pickup coils (No. 4). One great advantage of this invention is the fact that fewer pickup coils and SQUID magnetometers are needed to gather needed information in a lesser amount of time than previous biomagnetometers. Also, input from multiple dipoles can be displayed simultaneously.

As the system of **Junker** utilizes bio-imaging means to achieve its purposes, it presents the perfect platform onto which an imaging system such as **Kuc** may be applied. As EEG and EMG signals are already gathered, the MSI data could easily be examined for the same purposes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate and MSI system similar to Kuc into the brain-body actuated system of Junker for the purpose of gathering vital information using fewer pickup coils in a lesser amount of time.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Junker** in view of **Hartzell et al.**

For claim 18, the apparatus as taught by **Junker** includes the claimed subject matter as discussed in the rejection of claim 1. However, one feature that the reference does not teach is that the apparatus can be used by a plurality of users. Also a database for storing unique stimuli for respective users is also not included.

The brainwave-responsive apparatus taught by **Hartzell** teaches an apparatus that is for use with one or more subjects simultaneously for causing an output device to perform productive

functions. The system consists of one or more EEG detectors (Nos. 10a-n) each having input lines (No. 12) from a plurality of users. The EEG detectors are designed to generate output signals corresponding to different brain waves to provide signals or actually controlling an output device (No. 30). The EEG devices also stores unique stimuli depending on the user's brainwaves onto conventional strip chart recorders or magnetic tape. One advantage of this system is the fact that a productive function is performed using empathy training whereby two or more subjects may be trained to produce theta waves, either simultaneously or synchronously. Also elderly subjects can be trained to provide beta brainwaves on command.

Since both **Junker** and **Hartzell et al** both pertain to brainwave controlled apparatus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the system of Junker to be used by a plurality of users and for storing user unique stimuli for the purpose of accomplishing and recording productive tasks through the use of simultaneous or synchronous activation through multiple users. Also, the benefits to the elderly and children should not be overlooked.

6. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Junker** in view of **Adachi**.

For claim 44, the apparatus taught by **Junker** includes the claimed subject matter as noted in the rejection of claim 1 above. However, the reference does not cite localization means for identifying locations in the source of said stimulus.

The device for measuring a retina reflected light amount and a gaze detecting apparatus using the same taught by **Adachi** includes a series of measuring devices (Nos. 11-14) are fixedly arranged at four corner positions of a monitor device. Each device includes a laser (No. 111), semitransparent mirror (No. 113), and charge couple device (CCD) (No. 114) that receives infrared rays emitted by the laser and reflected by the face of the person. An intersection point P among all four devices indicates the location and orientation of the pupil of the person. The retina characteristics are continually monitored to calculate the differing pupil position and displacement angles. The claimed localization means is met by the display device (No. 4) of **Adachi** that identifies on the display the location in the user of the source of the stimulus. One obvious application of this technology is the control of a cursor on a computer monitor in lieu of the up- and down- keys of a keyboard. This particular combines a high level of accuracy at a decreased cost from other retina position detectors.

Since both **Junker** and **Adachi** both pertain to biologically inputted devices, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a means for detecting movement of the user's eye to initiate a control signal for the purpose of using the eye as an easy and inexpensive way to manipulate the cursor controller around the monitor output.

For claim 45, the aforementioned measurement devices also meet the adapting means for they adapt the display to change in response to a change in the location (eye movement) of the source.

7. Any inquiry concerning this communication should be directed to Examiner John Tweel at telephone number (703) 308 7826. The examiner can normally be reached on Monday-Thursday, 8:30a-5:00p. The examiner can also be reached on alternate Fridays.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Hofsass, can be reached on (703) 305 4717. The fax phone number for this group is (703) 305 3988.

John Tweel

December 30, 1999

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